Issued November 21, 1914.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE GEORGIA STATE COLLEGE OF AGRICULTURE, ANDREW M. SOULE, PRESIDENT; DAVID D. LONG, IN CHARGE SOIL SURVEY.

SOIL SURVEY OF JEFF DAVIS COUNTY, GEORGIA.

BY

PERCY O. WOOD, W. J. LATIMER, H. C. GOODRICH, AND E. C. HALL.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1913.]

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1914.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., May 12, 1914.

SIR: The accompanying report and soil map cover the survey of Jeff Davis County, Ga., one of the projects undertaken by the bureau during the field season of 1913. This work was done in cooperation with the Georgia State College of Agriculture, and the selection of the area was made after conference with state officials.

I have the honor to transmit herewith the manuscript report and map covering this area and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1913, as provided by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. D. F. HOUSTON,
Secretary of Agriculture.

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SOIL SURVEY OF JEFF DAVIS COUNTY, GEORGIA.

By PERCY O. WOOD, W. J. LATIMER, H. C. GOODRICH, and E. C. HALL.

DESCRIPTION OF THE AREA.

Jeff Davis County is located in southeastern Georgia. It is bounded on the north by Toombs, Montgomery, Wheeler, and Telfair Counties, on the west by Telfair and Coffee Counties, on the south by Coffee and Appling Counties, and on the east by Appling County. The Ocmulgee and Altamaha Rivers form the northern boundary line. The county has an area of 325 square miles, or 208,000 acres.

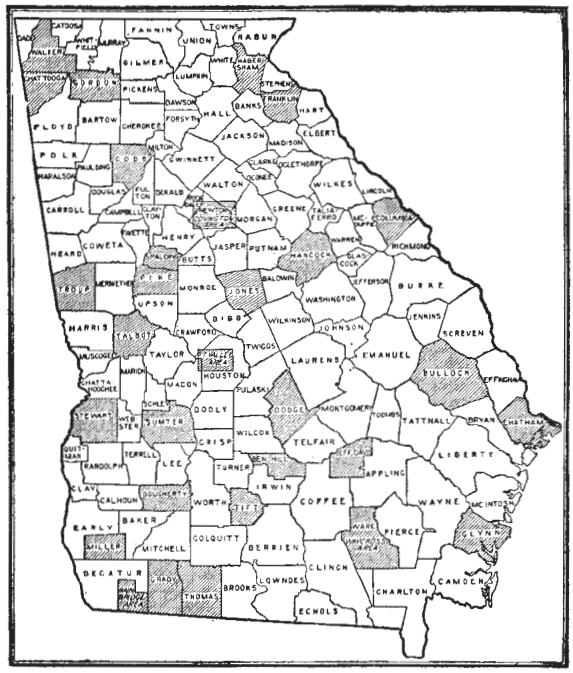

FIG. 1.—Sketch map showing areas surveyed in Georgia.

The county lies in the physiographic division of the United States known as the Coastal Plain. This region comprises two main belts. The one near the present coast line, known as the flatwoods country, is generally level and but little eroded; the other extending from the flatwoods section to the Piedmont Plateau is higher and more dissected by erosion, the topography being rolling and ridgy. These two belts meet in Jeff Davis County.

The flatwoods enters the county from the east and southeast and extends some distance west and southwest of the town of Hazlehurst. This part of the flatwoods does not have the level topography of the country adjacent to the coast, but the land is sufficiently flat to remain in a saturated condition during wet seasons and for con-

siderable periods after heavy rains. There are also numerous depressed areas and sags, known as bays or ponds, which contain water the year round except in very dry seasons. The flatwoods country near Hazlehurst is as high as much of the rolling, well-drained land in the county, but the slope east and southeast is so gradual that drainage is very deficient.

Bordering the Altamaha and Ocmulgee Rivers is a strip of country, considerably eroded and having a rolling to slightly hilly topography. Hazlehurst has an elevation above sea level of 256 feet, and the elevation at the point at which the Southern Railway crosses the Ocmulgee River, 6 miles distant, is 105.5 feet—a fall of about 25 feet to a mile. The Altamaha River bank at the Georgia & Florida Railway crossing is about 80 feet above sea level, and the elevation at Denton is 262.5 feet.

The drainage of Jeff Davis County falls naturally into two main divisions, that entering the Ocmulgee and Altamaha Rivers and that flowing to the southeast and into the Atlantic by way of the Satilla River. A line drawn through Denton and Hazlehurst, and roughly parallel to the rivers, approximately marks the drainage divide of the county, the slope to the west and north being great enough to give good drainage and that to the east and south so gradual as to render the drainage deficient. The Little Satilla River heads in a bay less than half a mile from Hazlehurst. This east and southeast drainage often starts near the crest of the slope adjacent to the river; sometimes the heads of two branches draining in opposite directions may be within a few rods of each other. Hurricane Creek, leaving the county near its southeastern corner, with its main tributaries, Whitehead and Little Hurricane Creeks, carries the drainage of the central and southeastern parts of the county. Gully Creek, rising a short distance northwest of Hazlehurst, and a number of small creeks in the southwestern part of the county, carry the drainage of the rolling section into the rivers. These creeks, with the exception of Hurricane, are comparatively short, and, like the other creeks in the county, are dry in summer, except during protracted rains or after a heavy downpour.

The drainage of the flatwoods region is generally undeveloped. The numerous bays and ponds are connected as a rule by shallow, poorly defined drainage ways. Water stands in them after heavy or protracted rains, and is removed largely by evaporation and seepage.

The original forest growth consisted mainly of longleaf pine, which has largely been removed. The remaining virgin timber is generally boxed for turpentine. The river swamp supports a heavy growth of bay, gums, oaks, cypress, and black and slash pine, practically none of which has yet been cut. The creeks and minor drainage

ways, or branches, are fringed with a growth of longleaf and shortleaf pine, gum, bay, and cypress.

Jeff Davis County was established in 1905, being formed from parts of Coffee and Appling Counties. It was at that time sparsely settled, but the population and number of farms have gradually increased, settlers coming in mainly from central and north Georgia and the Carolinas. According to the 1910 census the county has a population of 6,050. The colored population is probably slightly outnumbered by the white.

Hazlehurst, the county seat, is the largest town, having a population of about 1,200. It is the principal shipping point for the county. Denton is a small town in the southern part of the county. Brooker, New Roper, and Hall Still are small saw-mill and lumber camps on the Georgia & Florida Railway.

The transportation facilities are good. The Atlanta & Brunswick division of the Southern Railway crosses the north-central part of the county in a northwest-southeast direction, connecting at Jesup with the Atlantic Coast Line. The Georgia & Florida Railway, extending from Madison, Fla., to Augusta, Ga., passes through the county in a northeast-southwest direction. These two roads intersect at Hazlehurst. River traffic has declined since the completion of the railroads, although it has by no means been discontinued.

The roads of the county are for the most part unimproved, although the main ones are gradually being improved. There are no wagon bridges across the rivers, the only means of crossing being by ferries, which can not be operated when the rivers are at flood stage. The rural mail delivery service is fair, and the telephone is in use in nearly all parts of the county. The county is fairly well supplied with schools.

CLIMATE.

The climate of Jeff Davis County is typical of southern Georgia. The winters are mild, but cold periods of a few days duration are of common occurrence. Freezing weather and snow flurries are rare. The temperature for the winter months averages about 49° F. Vegetables may be grown almost continuously where temporary protection is given during periods of cold weather. Winter pasturage can easily be provided by growing such crops as oats, winter vetch, and bur clover. The temperature for the spring and fall months averages about 66°. While the summers are hot, excessively high temperatures are unusual. The mean temperature for the summer months is about 80°.

The rainfall is usually ample for all crops grown in the county, averaging about 47 inches for the year. The precipitation is fairly well distributed throughout the year, being heaviest during the

summer months. Periods of dry weather sometimes occur during the growing season, however, and crops, particularly on the sandier soils, suffer considerably.

There is no Weather Bureau station in Jeff Davis County, but the records of the stations at Waycross, Ware County, and Hawkinsville, Pulaski County, are fairly representative of the local climatic conditions. The following tables give the normal monthly, seasonal, and annual temperature and precipitation recorded at these stations:

Normal monthly, seasonal, and annual temperature and precipitation at Waycross, Ware County, Ga.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*
December	51.4	84	12	2.71	1.45	3.00
January	50.5	82	16	3.19	3.53	0.92
February	51.3	85	4	3.78	5.33	4.32
Winter	51.1			9.68	10.31	8.24
March	62.4	95	23	3.28	0.61	9.02
April	67.1	96	34	2.42	3.79	2.63
May	74.7	100	41	3.42	4.83	6.65
Spring	68.1			9.12	9.23	18.30
June	80.4	101	65	5.59	5.93	9.59
July	82.2	102	61	5.95	6.03	8.36
August	81.6	107	56	6.19	1.71	4.45
Summer	81.4			17.73	13.67	22.40
September	77.2	102	48	4.45	4.98	8.92
October	68.0	94	29	2.50	1.48	5.07
November	59.6	86	21	1.51	0.98	3.62
Fall	68.3			8.46	7.44	17.61
Year	67.2	107	4	44.99	40.65	66.55

Normal monthly, seasonal, and annual temperature and precipitation at Hawkinsville, Pulaski County, Ga.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*
December	47.4	81	13	3.76	1.76	3.00
January	46.0	81	4	4.04	3.45	2.78
February	46.6	81	−3	5.25	5.88	5.40
Winter	46.7			13.05	11.09	11.18
March	58.0	96	16	5.41	1.28	6.43
April	64.2	95	28	2.22	0.69	3.18
May	72.4	100	36	2.90	1.45	7.17
Spring	64.9			10.53	3.42	16.78
June	78.7	102	45	4.24	4.00	6.72
July	80.5	104	58	5.79	3.53	4.66
August	80.3	106	57	6.58	9.23	10.78
Summer	79.8			16.61	16.76	22.16
September	75.6	105	46	3.17	0.45	4.60
October	64.4	95	29	2.80	0.15	2.08
November	54.3	89	18	2.47	3.27	3.94
Fall	64.8			8.44	3.87	10.62
Year	62.4	106	−3	48.63	35.14	60.74

The average date of the first killing frost in the fall at Waycross is November 16 and that of the last in the spring March 11. The earliest date of killing frost in the fall recorded at this station is October 28 and the latest in the spring April 15. At the Hawkinsville station the average date of the first killing frost in the fall is November 12 and of the last in the spring March 17, while the earliest date recorded in the fall is October 23 and the latest date in the spring April 16. There is an average growing season in Jeff Davis County of about 9 months.

AGRICULTURE.

In Jeff Davis County, as in the other counties of southeast Georgia, agriculture until recently has been of secondary importance to the lumber and turpentine industries. The settlement and development of this section have been slow. After the Civil War most of the plantations were allowed to grow up in timber and progress was practically stopped until the inception of the lumber and turpentine industries. Now most of the longleaf yellow pine has been removed,

and with the decline of lumbering agriculture has become the principal industry.

Cotton and corn are the principal crops. Cotton is practically the only money crop of the county. Both the short-staple and long-staple, or Sea Island, varieties are grown, the former being the most popular. The 1910 census reports 5,597 acres in cotton, producing 2,445 bales, or an average of about 0.44 bale per acre. The production has increased somewhat since that year, about 3,000 bales being ginned in 1912.

The acreage of corn exceeds that of cotton. Hastings Prolific is the most popular variety, although this is losing favor because of the damage caused by the weevil. The 1910 census reports 9,471 acres devoted to corn in 1909, with a production of 119,261 bushels, or an average of 12.8 bushels per acre.

Oats are not so extensively grown, there being in 1909 only 1,279 acres in this crop, with a yield of 14,280 bushels. The ordinary yield is about 10 to 15 bushels per acre. The oats are usually cut for hay; a practice gaining favor in late years is to bale them in the field. The Texas Rustproof is the variety most commonly grown, and the Appler variety is also popular.

Some farmers say that wheat has given excellent results, but practically none is grown at present. Rye and barley receive but little attention. Small patches of rice are quite commonly grown on the slopes or at the heads of the branches. This crop produces an average of 14 bushels per acre. The upland variety only is grown.

A patch of sugar cane is found on nearly every farm. Very little of the sirup, however, is sold, being made simply to supply the home needs.

Cowpeas and velvet beans are important forage crops, and their value, both as feed and as a means of enriching the soil, is being more widely recognized. The most common practice is to plant the corn in rows 4 feet apart, growing peas or beans in every third row. Difficulty is experienced in getting the seed of cowpeas or velvet beans to mature, although they make a rank growth of vine. Stock is turned into the field after the corn is pulled in the fall and allowed to graze on the forage.

Besides cowpeas, peanuts are frequently grown in alternate rows with corn, and sometimes alone in small fields. This crop is valuable as a means of enriching the soil, but is grown primarily for hog feed, the hogs being turned into the field in the fall. Chufas are sometimes grown instead of peanuts for the same purpose.

On most farms a small acreage of sweet potatoes is grown for home use, the surplus being fed to the hogs. In 1909 there were 313 acres in sweet potatoes and yams, producing 27,092 bushels, or an average

of 86.5 bushels per acre. Much larger yields are obtained by the better farmers.

Practically every farm has a garden, which in most cases is located near a branch or drainage way, in order to secure the benefit of better moisture conditions in summer. Small patches of watermelons and cantaloupes are also found. With one or two exceptions, no truck crop is grown on a commercial scale. At Denton a small trucking business is being developed, and an effort is being made to interest the neighboring farmers in a cooperative enterprise.

There are a few pecan trees in the county, but no effort is made to grow them on a commercial scale.

Scuppernong grapes are grown on nearly every farm. Figs also do well. A few small orchards of peaches have been planted, but in most cases these show the effects of neglect.

The agriculture of Jeff Davis County consists chiefly of the production of cotton and corn, and not enough of the latter is produced to supply the local demand. The farmers are often forced to buy feed and even roughage for stock, and in some instances much of the food for home use. This state of affairs, however, is gradually changing. Farmers are beginning to appreciate the importance of crop rotation, of the incorporation of organic matter with the soil, and of adequate drainage. Better cultural methods are gradually being adopted, and improved machinery is being used by a small but increasing number of farmers. It is only within very recent years that riding cultivators have been used in the county. Most of the farm work is done with one-mule implements.

The use of commercial fertilizers is universal. Cotton, corn, sugar cane, and potatoes are always fertilized, especially the first three crops, one application being made at the time of or just before planting, one several weeks later, and in case of slow or unsatisfactory growth, a third still later. Low-grade fertilizers have been extensively used, but the quality is being improved. An 8–2–2 [1] mixture is still used by many farmers for all crops, but the more progressive ones use a 9–2–3 mixture, or even a higher grade. From 200 to 250 pounds of a 9–2–3 mixture is used by some of the more progressive farmers for cotton, an 8–2–2 or 8–2–3 mixture for corn, while for sugar cane one of the common mixtures is used, supplemented by cottonseed meal. That thorough preparation of the soil, thorough and frequent cultivation, the selection of good seed, and other progressive methods are as effective in increasing crop yields as the use of fertilizers is beginning to be appreciated. Barnyard manure is recognized as extremely beneficial, and farmers are exercising more care in saving compost. The home mixing of fertilizers is followed

[1] Eight per cent phosphoric acid, 2 per cent nitrogen, and 2 per cent potash.

by only a few farmers, but the practice is gaining favor. In 1909 the total expenditure for fertilizers amounted to $26,072, or about $90 for each of the 297 farms reporting.

Cattle and hogs are kept on every farm. These are allowed to run at large. Some of the better farmers are improving the grade of stock. Mules are used for a greater part of the farm work, but very few of them are raised in the county.

Crop rotation is practiced only in a limited way, although the value of this practice is generally recognized. Cotton is often grown for three and four successive years, or until the yield decreases considerably, when corn is planted, usually with peanuts or cowpeas, the land again reverting to cotton the next year. The best rotations include at least one leguminous crop to be plowed under. Lime is of great value also, as most of the soils are acid. There are many fields and some entire farms which are greatly in need of drainage.

According to the 1910 census, 83.8 per cent of the land area of the county is in farms, with only 14.9 per cent of the farm land improved. The average size of the farms is 233.4 acres,[1] with an average of 34.8 acres per farm improved. The number of farms is gradually increasing. Of the farms in the county, 58.3 per cent are operated by the owners. The 1910 census reports 221 native white and 65 negro tenants, and an equal number of negro owners. The most common form of tenancy is the share system. The owner generally furnishes the land, half the seed and fertilizers, and the tenant the labor, each taking half the crop. The tenant system secures the labor of the tenant family, which is an important item in cotton production. In the cotton-picking season many negroes from the towns are employed in the cotton fields, but practically no other temporary or wage labor is hired.

The soils of the county are sufficiently varied to support a more diversified agriculture than now practiced. The soils, climate, and rainfall are well adapted to the successful production of any of the large number of crops common to this section of the country. There are at present large areas of unimproved land, which, if properly drained, may be made available for agricultural use.

SOILS.

Jeff Davis County is situated in the Atlantic Coastal Plain. The material forming the soils of this physiographic division was carried by water from the regions now known as the Piedmont Plateau and Appalachian Mountains and Plateaus and deposited in the sea.

[1] As the census tabulates each tenancy as a "farm," the individual holding has an average size greater than this.

At the time of its deposition the material was more or less assorted by the varying velocity of the currents in which it was laid down. Further changes have taken place as a result of erosion and of varying degrees of oxidation, drainage, and aeration. The accumulation of the remains of vegetation and other organic life has produced further differentiation in the material. These differences both of original texture and of subsequent modification form the basis for the separation of the soils into different series and types.

In general the soils of Jeff Davis County consist of sands of varying texture, underlain, usually at comparatively shallow depths, by sandy clays. These sandy clays rest, in turn, upon material composed mostly of compact, rather coarse sandy to gravelly clays, mottled and streaked with red, yellow, gray, and drab colors. In the case of some soils having a rolling topography the upper mantle has been partly or even wholly removed by erosion, but in most cases the deeper reddish mottled material occurs at depths greater than 3 feet, which is the depth to which borings are made in field work.

Taken as a whole, the surface soils of the county are grayish yellow to yellow, with yellowish subsoils. The marked variations from this general occurrence result from a flat topography and poor drainage, and consequent incomplete aeration and oxidation. In such cases the soils are usually dark gray to black in the surface portion, and the subsoils are mottled yellow, drab, and gray.

On the more rolling and better drained areas varying quantities of pebbles and bowlders occur, consisting of sand and clay particles cemented together by iron salts. The fragments range in color from yellow to dark reddish brown, and vary in size from that of a pea to a mass as large as a peck measure, though fragments the latter size are unusual, being found only on slopes and never in sufficient quantities to interfere with cultivation.

Twenty-one soil types, exclusive of Meadow, were mapped in Jeff Davis County, representing 12 series. The Norfolk series is the most extensively developed.

It is sometimes impossible to draw a strictly accurate boundary between two types on a map with a scale of only 1 inch to a mile, and in an area with such varied and constantly changing soils. The overlapping areas, or gradation zones, necessarily present difficulties in mapping which may appear as discrepancies, but which, from the nature of the case, are unavoidable. In the following chapters the different soil types are described in detail.

The following table gives the actual and relative extent of each of the soil types mapped:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk sand	48,256	23.2	Portsmouth loam	2,816	1.4
Plummer sand	29,056	14.0	Kalmia sandy loam	2,112	1.0
Tifton sandy loam	24,640	11.8	Cahaba sandy loam	1,984	.9
Meadow	14,144	6.8	Kalmia sand	1,408	.7
Norfolk sandy loam	9,920	6.3	Leaf clay loam	1,408	.7
Flat phase	3,072		Norfolk coarse sandy loam	1,280	.6
Ruston sandy loam	12,864	6.2	Myatt sand	1,280	.6
Plummer sandy loam	12,160	5.8	Susquehanna sandy loam	960	.4
Norfolk loamy sand	11,584	5.6	Cahaba sand	768	.4
Leon sand	10,048	4.8	Kalmia coarse sand	576	.3
Congaree silty clay	8,000	3.8			
Norfolk coarse sand	5,568	2.7	Total	208,000	
Portsmouth sandy loam	4,096	2.0			

GRAY SOILS.

SEDIMENTARY MATERIAL—SANDS AND CLAYS.

Norfolk Series.

The surface soils of the Norfolk series are prevailingly gray, ranging from light gray to grayish yellow. The subsoils are yellow and have a friable structure. These soils occupy nearly level to rolling uplands throughout the Coastal Plain. They are derived from unconsolidated deposits of sands and clays.

NORFOLK COARSE SAND.

The soil of the Norfolk coarse sand, to a depth of about 8 inches, is a typical coarse sand, the apparently loamy texture of the surface few inches being due to accumulated organic matter and not to the presence of fine mineral particles. The soil is dark gray to grayish yellow in color, grading into pale yellow or yellow below. The texture continues without change to a depth of 36 inches, the material being loose and incoherent. Large quantities of quartz gravel and a few light-colored ironstone pebbles are usually present. In some cases where the underlying clay is encountered a short distance below a depth of 3 feet the lower part of the soil section is more compact, or even slightly sticky.

The type occupies flat-topped ridges and the slopes and ridges between drainage ways. It is practically confined to small isolated areas in the higher rolling belt along the rivers. The forest growth consists of blackjack and other scrub oaks, with some longleaf pine.

The type also supports a scanty growth of wire grass and clumps of saw palmetto.

Drainage is usually excessive, and the type is practically unused for farming. When attempts are made to cultivate it, a liberal supply of organic matter is necessary to increase its water-holding capacity. Cowpeas, vetch, oats, and rye are good crops for this purpose, and where available barnyard manure or compost should be used. Large quantities of commercial fertilizer are also necessary, particularly those high in nitrogen and potash.

When heavily fertilized and properly managed this soil is suited to trucking. At present it has a low agricultural value.

NORFOLK SAND.

The soil of the Norfolk sand consists of a grayish sand, often quite loamy in the surface 2 or 3 inches, and becoming a grayish yellow to yellow below. There is practically no division line between soil and subsoil, the yellow medium sand continuing without change to 36 inches. Where clay occurs near the 3-foot depth, the lower part of the soil section is somewhat loamy, but in the many areas where the sand continues to a depth of several feet there is no influence from the underlying material. Practically all of the sand is quartz, and the texture varies slightly, being somewhat finer or coarser than the average in local areas.

The Norfolk sand is the most extensive and most widely distributed soil of the county. It has its greatest development in the southeastern and southern parts.

In topography the type varies greatly. Almost unbroken areas are developed along the larger streams and creeks, usually on the eastern and northern sides, as along Hurricane and Whitehead Creeks, and these areas, together with those in the high, rolling belt bordering the rivers, have a rolling topography and excessive drainage. On superficial examination such areas appear to consist of coarse sand, the finer particles having been washed from the immediate surface. In the southeastern and southern parts of the county the topography is more level and the drainage not well established, the water level often standing 3 or 4 feet below the surface. In such cases the lower part of the soil section is generally pale yellow in color and in places nearly white.

On the better drained, more rolling areas the forest growth consists largely of blackjack oak, such areas being locally known as "blackjack ridges." In addition to other oaks, there is found a scanty growth of wire grass and some saw palmetto. Where the type is more level, as in the flatwoods, it originally supported a growth of longleaf pine, with some small oaks.

A few small areas are included with this type, which had they been of sufficient size would have been mapped as Norfolk fine sand. They differ from the sand in having a finer texture and in supporting a somewhat heavier growth of pine.

A large part of the type is under cultivation, but crop yields are low. With an application of 200 pounds per acre of fertilizer, usually an 8–2–2 grade, yields of 12 to 15 bushels of corn and one-half bale of cotton per acre are obtained. With a similar application of fertilizer on new ground yields of 15 to 20 bushels of corn and one-half to three-fourths bale of cotton are secured in favorable seasons. During dry seasons crops suffer from drought.

The Norfolk sand is a special-purpose rather than a general farming soil. It is a warm, early, well-drained soil, and with fertilization produces good yields of the various truck crops. It is on this soil that the trucking industry has been undertaken near Denton. When general farming is practiced heavy applications of fertilizers are necessary, in conjunction with some organic fertilizer, such as cotton-seed meal, compost, or green crops turned under.

This type is valued at $5 to $15 an acre, depending on its location and nearness to more valuable soils.

NORFOLK LOAMY SAND.

The soil of the Norfolk loamy sand, to a depth of 6 to 8 inches, is a gray to yellowish-gray loamy sand. This is underlain by a slightly loamy yellow sand, which extends to a depth of 24 to 30 inches, below which a yellow, sticky sand to light sandy loam is encountered. Occasionally there is an inch or more of yellow sandy clay at the bottom of the 3-foot section. Mottlings of ocherous yellow and red sometimes occur in the lower subsoil, and small quantities of ferruginous pebbles, similar to those characteristic of the Tifton sandy loam, are usually present on the surface and throughout the soil section. In places the substratum underlying this type seems to consist of Tifton material, as seen in cuts and gullies in the roads, but this does not especially influence the overlying soil, except in preventing too rapid leaching.

The topography is level to gently sloping. The greater part of the type is well drained, but in level areas where the underlying clay is comparatively near the surface, drainage is deficient. Such an area occurs east of Mount Zion Church. Here a rank growth of sorrel indicates the need of drainage and lime. The surface of this area is practically level, with a slight fall to the branches or streams, but the drainage ways are sufficiently numerous to permit the use of tile drains.

The Norfolk loamy sand is intermediate in texture and productiveness between the Norfolk sand and the Norfolk sandy loam. It is

well adapted to the general farm crops, good yields of which are obtained by rather heavy fertilization. On some of the better farms from 600 to 1,000 pounds of commercial fertilizer per acre are used, and yields of 40 to 50 bushels of corn, three-fourths to 1 bale of cotton, and 25 bushels of oats are secured. Sweet potatoes do well. Sugar cane also thrives and the quality of sirup is superior to that produced on the heavier soils. Peanuts and cowpeas do well, the former being grown with the corn. Cowpeas generally follow oats and are cut for hay.

The original forest growth on the Norfolk loamy sand consisted of longleaf pine and various oaks. The price of this land varies considerably but it has about the same value as the Norfolk sandy loam.

NORFOLK COARSE SANDY LOAM.

The Norfolk coarse sandy loam usually consists of 2 or 3 inches of gray loamy coarse sand, which quickly grades into a yellow coarse sandy loam or loamy sand. This extends to a depth of about 15 to 18 inches and is underlain by a yellow, friable coarse sandy clay sometimes mottled with red. Both soil and subsoil carry considerable quartz gravel and some ferruginous pebbles are usually present. At the immediate surface there is a high percentage of gravel and coarse quartz particles, the finer particles having been carried away. The soil contains fairly large quantities of the finer particles and sufficient coarse material to impart a sharp, gritty feel.

The surface of the Norfolk coarse sandy loam is usually rolling or sloping, the soil occurring in small bodies generally in the higher parts of the county adjoining the streams. It has good natural drainage, a fairly retentive subsoil, and with the incorporation of organic matter and liberal application of fertilizers produces fair yields of the ordinary farm crops. It is a warm, early soil, suitable for truck growing.

The natural forest growth consists of longleaf pine and various scrub oaks, mainly blackjack and red oak. The type also supports a scant growth of wire grass, with some broom sedge and saw palmetto. Occurring in small, isolated areas, its value depends mainly upon that of the surrounding soils.

NORFOLK SANDY LOAM.

The surface soil of the Norfolk sandy loam varies greatly in depth, averaging between 15 and 20 inches. It consists of a loamy sand to light sandy loam, gray at the surface, but changing immediately below to a light yellow. It usually has a rather uniform, medium texture. The subsoil is a friable sandy clay, the upper part some-

times being more nearly a sticky sand or sandy loam. It has a pronounced yellow color, which grades into a greenish yellow at lower depths. The lower subsoil often contains mottlings of reddish yellow, doubtless caused by the presence of ferruginous material, such as that composing the pebbles of the Tifton sandy loam. A few of these pebbles frequently occur on the surface and to a slight extent throughout the soil section.

The topography of the Norfolk sandy loam is undulating to gently rolling. The type is not developed in large areas, but it constitutes one of the best soils of the county. It was largely on this type that the first settlement in the county was made. The soil is mellow and easily worked; the subsoil is sufficiently compact to hold moisture and fertilizers well, and yet not compact enough to prevent good drainage. The Norfolk sandy loam is closely associated with the Tifton sandy loam, into which it often grades, differing from it in the comparative absence of pebbles and the lighter color of the subsoil. The soil in places resembles the Norfolk sand in appearance, working up loose and deep in the roads, with no clay in evidence until a boring is made. On the breaks between the main bodies of this type and the streams or draws narrow strips of Tifton material are frequently encountered. A substratum of Tifton material and pebbles underlies much of the type, such material often being exposed on the slopes, where erosion has removed the upper soil, although not developed anywhere in the immediate vicinity.

The Norfolk sandy loam is an excellent agricultural soil, ranking next to the Tifton sandy loam. It is well suited to general farming, and is adapted to all crops grown in the county, giving particularly good yields of corn and sweet potatoes. Yields of one-half to three-fourths bale of cotton per acre are ordinarily obtained. But little sea-island cotton is grown on this type. Sugar cane does well, usually being grown on the lower slopes, where the moisture conditions are better. The sirup is of good quality and of fairly light color, being better in this respect than that produced on the Tifton sandy loam. Oats do well, as do cowpeas, velvet beans, and peanuts. Irish potatoes also make good yields. The soil is well adapted to trucking, but practically no attempt has been made to develop this industry.

The incorporation of organic matter by plowing under some leguminous crop, where manure is not available, is highly beneficial. Even with the fairly heavy applications of commercial fertilizers now made the addition of humus is of great benefit. Lime is also beneficial.

The Norfolk sandy loam, like the other upland soils of the county, is composed of marine sedimentary material. It was originally forested with longleaf pine. Most of the type has been cleared and is

in farms. It is one of the higher priced soils of the county, ranging in value from $15 to $35 or more an acre.

Norfolk sandy loam, flat phase.—The soil of the flat phase of the Norfolk sandy loam is a loamy medium sand to an average depth of about 20 inches. The immediate surface is usually a rather dark gray color, the material changing immediately beneath to a light gray, and at 8 or 10 inches to a yellowish gray or light yellow. The subsoil is a yellow sandy loam, grading into a sandy clay which is frequently mottled with reddish and brownish colors, and in the lower part, usually at 28 to 30 inches, with drab and gray. These gray and drab mottlings are characteristic of the type and are caused by poor drainage. The bright mottlings are not very pronounced or numerous, and are probably caused by ferruginous pebbles, small quantities of which are scattered over the surface and throughout the soil.

The topography is practically level and the phase is greatly in need of drainage. In places the lower part of the subsoil is saturated, except in the driest seasons, and in wet seasons it is too wet to produce good crops.

In comparatively dry seasons good yields of the general farm crops are obtained, corn, cotton, and oats being the crops most commonly grown.

The flat phase of the Norfolk sandy loam is not extensive. The principal areas occur in the immediate vicinity of Hazlehurst. Smaller areas are encountered in other parts of the county.

Originally the phase was forested with longleaf and shortleaf pine. Near Hazlehurst this soil is valued at about $40 an acre, but in other areas it can be purchased for much less.

Tifton Series.

The Tifton soils are prevailingly gray, ranging to brownish gray. The subsoils consist of bright-yellow, friable sandy clay. Small iron concretions occur on the surface and throughout the soil section. The topography varies from flat to gently rolling, and drainage is good. The Tifton series extends through southern South Carolina and across Georgia into Alabama. The soils are sedimentary from the sandy clays of the Coastal Plain region.

Tifton sandy loam.

The soil of the Tifton sandy loam consists of a brownish-gray loamy sand, grading at 8 to 10 inches into a yellowish loamy sand. This is underlain at about 12 to 18 inches by a friable sandy clay of a peculiar greenish yellow color, which becomes more compact with depth. Red mottlings, or sometimes sections of uniform, red color, are often present in the lower subsoil. On the steeper slopes and ridges the surface soil is shallower, the clay often being encountered at a depth

of only a few inches. The chief characteristic of the type is the presence of ferruginous pebbles, which are concretionary in appearance, but which on examination are found to be composed of iron oxides cementing masses of sand or clay, without concretionary structure. The pebbles are commonly called "pimples," and give the type its local name of "pimply" or "pebbly" land.

This soil, while predominantly a sandy loam, carries considerable material of a coarser texture, giving it a very sandy feel. At the same time it contains a sufficient quantity of fine particles to make it loamy, and the subsoil is compact enough to make it retentive of moisture and fertilizers. The subsoil is hard when dry, but ordinarily it is not reached by the plow. The type as a whole is more difficult to cultivate than the Norfolk sandy loam.

Owing to its rolling topography the Tifton sandy loam has good natural drainage. It occurs on rather broad ridges and the upper parts of the slopes, usually grading down the slope into the Norfolk sandy loam or the Plummer soils. Contour cultivation is usually practiced, but erosion is generally not serious enough to necessitate terracing.

The Tifton sandy loam is commonly considered the best soil in the county. It is an excellent general farming soil, giving good yields of all crops suited to the region. Some long-staple or sea-island cotton is grown, this soil being practically the only one on which this variety of cotton is produced. Yields of one-fourth to five-eighths bale per acre are common and higher yields are secured under the best conditions. Short-staple cotton averages from one-half to three-fourths bale, yields of 1 bale to the acre often being obtained. Corn produces from 20 to 25 bushels per acre. Peanuts, sugar cane, cowpeas, oats, and sweet potatoes do well. A common practice is to plant one row of peanuts or velvet beans to two rows of corn. The next year cotton is planted, returning to corn and peanuts or beans the year after. Some farmers include oats, followed by cowpeas, making a 3-year rotation. On new land corn is commonly grown the first year. Cotton, however, is often planted on new land and thereafter for several years, although many farmers have discontinued this practice.

All crops are fertilized on this soil. Barnyard manure gives excellent results, and is used wherever available. The benefits resulting from applications of manure or heavy applications of commercial fertilizer are evident for several years, owing to the retentive nature of the subsoil. In the absence of sufficient quantities of barnyard manure the plowing under of green crops, particularly leguminous crops, such as cowpeas, is highly beneficial.

The type was originally forested with a good growth of longleaf pine. The best timber remaining in the county is on this soil. Some excellent areas as yet uncleared can be bought for $10 to $15

an acre. Land which has been cleared and fenced is usually held at $25 to $40 an acre, although a higher value is placed on it by some farmers.

Ruston Series.

The Ruston soils are gray, varying to grayish brown. The subsoils are reddish yellow to yellowish red or dull red, and are moderately friable, consisting generally of sandy clay. Occasionally the lower subsoils are mottled with gray and shades of yellow. This series is intermediate between the Orangeburg and Norfolk series in the color of its subsoil, and the Orangeburg and Norfolk on the one hand and the Susquehanna on the other in point of subsoil structure. All these soils are derived from material of similar origin, namely, unconsolidated deposits of the Coastal Plain.

Ruston sandy loam.

The soil of the Ruston sandy loam is a light-gray to brownish-gray loamy sand passing at a depth of 4 to 6 inches into a deep-yellow or slightly reddish yellow loamy sand or light sandy loam. The subsoil, beginning at depths varying from about 10 to 18 inches, is a yellowish-red or reddish-yellow sandy clay, which is rather friable, but stiffer and more compact than the subsoils of either the Norfolk or Tifton types. Noticeable quantities of both quartz gravel and ferruginous pebbles are present on the surface and throughout the soil section. While the texture of the greater part of the type is a medium sand, local areas, too small to separate on the map, carry a relatively high percentage of coarse particles. Spots of Ruston coarse sandy loam, Norfolk sandy loam, and Norfolk coarse sandy loam, and a few small areas of Orangeburg sandy loam, all too small to be shown separately on the soil map, are included with this type.

The Ruston sandy loam occurs on slopes and ridges, usually adjoining the Ocmulgee and Altamaha Rivers and the larger creeks. It has the roughest topography of any soil in the county. Erosion has removed much of the surface soil in places, leaving the hard clay exposed. The typical color of this clay is a buff yellow, differing slightly from that underlying the Norfolk or Tifton soils. In some places it is a peculiar dingy red color and in others the red is mingled with yellow. Often ledges and bands of gray, soft, coarse sandstone are exposed in this type, especially near the base of slopes and along stream courses.

The drainage of the Ruston sandy loam is not uniform. Poorly drained spots of varying size are common, due to the movement of water along the surface of the subsoil. The rather steep slopes from the edge of the upland to the river or river terraces, on which this soil typically occurs, are badly dissected by erosion.

This type is intermediate between the Norfolk and the Orangeburg soils, possessing some characteristics of both. It originally supported a growth of longleaf pine, with clumps of scrub oak where the surface soil is deeper. Some excellent pine remains, but the best timber has been removed.

Very little of the Ruston sandy loam is cultivated. The topography of much of it necessitates terracing. On the better situated areas with the incorporation of organic matter, the application of fertilizers, and possibly the installation of tile drains this soil is capable of producing yields nearly equal to those of the Norfolk sandy loam.

Susquehanna Series.

The Susquehanna soils are gray, ranging to reddish. The subsoils are mottled gray and red or gray, red, and yellow, and consist of plastic, heavy clay. The color of the subsoils varies, often being red, white, drab, yellow, and sometimes purple, although red practically always predominates, the other colors appearing only as mottlings in the lower part of the section. The Susquehanna series is most extensively developed in the higher part of the Coastal Plain from the vicinity of Chesapeake Bay to central Texas.

SUSQUEHANNA SANDY LOAM.

The soil of the Susquehanna sandy loam consists of a gray to yellowish-gray sand, from 4 to 10 inches deep. The subsoil is an intensely mottled dull-red and gray, plastic, impervious clay, which is in places light drab, mottled with red, at about 20 inches. Pockets of sand sometimes occur in the lower part of the 3-foot section. In places the surface soil has been removed by erosion, leaving the heavy clay exposed, but usually there are a few inches of sandy material over the clay. This sandy surface soil varies somewhat in texture, sometimes being a fine sandy loam, or, in very small areas, a silt loam.

The type occurs in small bodies principally on the slopes along the Ocmulgee River. It is one of the less extensive types of the county, and has no agricultural importance. Owing to the accumulation of seepage waters some areas can not be cultivated unless artificially drained. The type is forested with loblolly and shortleaf pine, and to some extent with gum, oak, and magnolia. It is a difficult soil to handle, and is unused except as pasture and forest land. With proper drainage it should give fair yields of corn, oats, and forage crops.

Leon Series.

The Leon soils are light gray, ranging to white. The soils are loose and sandy, and as a rule a "hardpan" stratum is encountered

at 12 to 24 inches. This stratum averages from 8 to 10 inches in thickness and consists of a compact layer of fine sand or sand ranging in color from black or dark rusty brown in the upper 2 or 3 inches to rusty brown or a slightly darker color in the lower portion. The material becomes less compact and lighter in color as the lower part of the stratum is approached, a white sand frequently underlying the layer within the 3-foot section. The material of this hardpan stratum is high in organic matter and very low in iron.

LEON SAND.

The soil of the Leon sand to a depth of 8 to 14 inches consists of a light-gray to white sand. The presence of organic matter often gives the surface inch or two a darker color, although this is absent in the more sloping areas. In plowed fields and in the roads the material is as white as beach sand. As ponds or drainage ways are approached and in level areas the immediate surface becomes darker. The surface soil is underlain by a layer of brown, compact fine to medium sand 6 to 12 inches thick. This material is characteristic of the type, and its hardpan nature is due to partial cementation by iron salts and organic matter. While it does not form a hard crust, it is sufficiently compact to interfere with the downward movement of water. Below this brown layer a fine to medium sand is encountered. This material is sometimes white, mottled with yellow in the lower portion, and sometimes yellow. There is a sharp line of demarcation between the surface soil and the brown hardpan layer, but the line separating the hardpan from the subsoil is less distinct. The lower part of the subsoil is often saturated, particularly in the more nearly level areas and areas adjacent to drainage ways and ponds.

The Leon sand is developed mainly in the flatwoods section southeast and south of Hazlehurst, where it occurs as gently undulating to flat land, usually not in large bodies, but in strips adjoining the bays and ponds and in nearly flat belts between them. The higher areas of such land are usually occupied by the Norfolk sand, the occurrence of which is indicated by a scattered growth of scrub oak.

The native vegetation consists of a scattered growth of shortleaf and longleaf pine, the latter predominating. A fair growth of wire grass and clumps of saw palmetto are common. The type is inextensive in the county and is not cultivated. This soil has a very low value.

PLUMMER SERIES.

The Plummer soils are gray. They are frequently mottled with dark brown and are underlain at 8 to 20 inches by light-gray, compact material more or less mottled with streaks of brown and yellow.

The lower part of the subsoil usually consists of sandy clay or sticky sandy material with pockets or layers of yellowish plastic sandy clay. The soils are derived from reworked Piedmont-Appalachian material. They are nearly always in a sticky condition, and water frequently stands on the surface after heavy rains. This series is typically developed in the flatwoods region of the Coastal Plain.

PLUMMER SAND.

The surface soil of the Plummer sand consists of a dark-gray loamy sand to a depth of 4 to 8 inches, grading into a gray sand, which extends to a depth of at least 36 inches. Sometimes the lower part of the section has a light-gray to nearly white color. In places the accumulation of organic matter causes the surface 2 or 3 inches to be almost black.

This type occurs on the lower slopes adjoining drainage ways. Along the minor branches and draws a narrow strip of Meadow usually occurs in the center of the wet area, but this material can not be satisfactorily shown on the map. At the heads of small draws the Plummer sand often occupies a fan-shaped area, sometimes extending for some distance up the slopes. The natural drainage is extremely poor. The soil is kept saturated by seepage from higher lying areas and is very difficult to drain. No attempt has been made to drain or cultivate any of it, except occasional small areas and patches in the corners of fields of other soils.

The Plummer sand also occupies to some extent depressed areas in the flatwoods. These sags closely resemble the typical Portsmouth bays, although generally there is less cypress present and the trees are smaller on the Plummer soil. The soil in "sand ponds" usually has a browner color than the Plummer sand on the slopes. In places a grayish-brown or very light gray and brown sand is encountered. The same surface layer of dark loamy material, however, is present, and the same saturated condition exists throughout much of the year. All of these areas are inundated except during the driest periods in summer, when they afford some pasture.

The Plummer sand supports a growth of longleaf and shortleaf pine, wire grass, gallberry, saw palmetto, and pitcher plant. The boundary between this soil and the adjoining types is often quite accurately marked by the gallberry bushes, this plant being characteristic of the Plummer series.

PLUMMER SANDY LOAM.

The surface soil of the Plummer sandy loam consists of a gray loamy sand which becomes nearly white as depth increases. The immediate surface is usually dark gray to black from organic matter.

The subsoil, encountered usually at 15 to 30 inches, is a mottled gray and yellow heavy sandy loam, passing into a substratum of gray and yellow, heavy, impervious clay. The sand entering into the composition of the type averages medium in texture, but variations occur, especially in the vicinity of the coarse-textured Norfolk soils.

This soil, like the Plummer sand, has practically no agricultural value, owing to its wet condition. The impervious clay substratum prevents the downward movement of water, and the type is kept saturated by seepage from higher lying soils. Like the sand, the Plummer sandy loam occurs on the slopes and at the heads of drainage ways, and in depressed areas and ponds in the flatwoods. It is practically waste land in its present condition, being valued only for the scanty pasturage it affords. The vegetation on the sandy loam is the same as that found on the sand.

WATER-LAID MATERIAL (OLD ALLUVIUM)—MIXED DERIVATION.

Kalmia Series.

The surface soils of the Kalmia series are gray, ranging to grayish yellow, and the subsoils are mottled gray and yellow. The series is developed along streams of the Coastal Plain region on terraces lying largely above overflow. It occurs most extensively in Mississippi and Alabama. The soils are formed largely of material washed from Coastal Plain soils, although along the larger streams issuing from the Appalachian Mountains and Piedmont Plateau more or less sediment from this region is mixed with the deposits. In the better drained situations the subsoils are yellow, the soils of such areas resembling very closely the corresponding members of the Norfolk series.

KALMIA COARSE SAND.

The surface soil of the Kalmia coarse sand consists of a loamy coarse sand. The material at the immediate surface is quite loamy and gray in color. Below 2 or 3 inches it is grayish yellow, and only slightly loamy. The subsoil is encountered at 6 to 8 inches. It consists of a yellow, loose and incoherent coarse sand, and extends to a depth of 36 inches or more.

This type is not extensively developed in Jeff Davis County. It occupies the terraces or second bottoms of the Ocmulgee and Altamaha Rivers. Like the other terrace soils of the county, it is subject to occasional overflow. The soil is alluvial in origin. The topography is flat, and drainage is good to excessive. The timber growth consists of various oaks, none of which attain large size, and some longleaf pine.

There are a few cultivated fields on this type, in the vicinity of Hall Still, which produce medium yields of corn and cotton in favor-

able seasons. With fertilization and the addition of organic matter the soil should be well adapted to the production of early truck crops, and to melons and cantaloupes.

KALMIA SAND.

The surface soil of the Kalmia sand consists of a slightly loamy sand to a depth of 8 or 10 inches, the surface 3 or 4 inches being quite loamy and gray in color, from accumulated organic matter, and the lower part less loamy and yellowish gray to yellow. The subsoil is a yellow sand grading at lower depths into a pale-yellow sand. This type closely resembles the Norfolk sand.

The Kalmia sand occupies the second bottoms along the rivers and larger creeks. It is not developed in large areas, but in patches on the main terraces. It is an alluvial soil. The texture is somewhat variable, but averages a medium sand. In some small patches, not important enough to be mapped separately, the texture is a fine sand.

The topography is flat to very slightly undulating. The natural drainage is well established, and in places excessive. The type is subject to occasional heavy overflows, and very little of it is under cultivation. It is forested with a scattered growth of various oaks, all of which are small, and some pine. A fair growth of wire grass affords some pasture, and the type is but little used for any other purpose.

Where there is little danger of late overflow, this should be an excellent soil for truck crops. With the incorporation of organic matter and fertilizers, the ordinary farm crops should do well.

KALMIA SANDY LOAM.

The surface soil of the Kalmia sandy loam consists of a gray to dark-gray loamy sand, underlain at about 6 inches by a pale-yellow light sandy loam, which extends to a depth of about 12 to 20 inches. The subsoil in typical areas is a yellow or pale-yellow friable sandy clay, extending to a depth of more than 3 feet. Frequently in the poorer drained situations the lower part of the subsoil is mottled with gray or brown. Included in this type and closely associated with it are small bodies of dark-gray loamy sand, underlain by a mottled gray or drab and yellow heavy sandy clay, which, had they been of sufficient size, would have been classed as Myatt sandy loam. The surface drainage of such bodies is usually poor.

The Kalmia sandy loam is developed on the second bottoms and high terraces along the rivers and larger creeks of the county. The surface is predominantly flat, although low, undulating ridges and slightly depressed areas are of frequent occurrence. Surface drainage is generally good in the low situations, while the flatter areas require ditching before they can be used for agricultural purposes.

While a small part of this type is cleared and cultivated, the greater part supports a scattered growth of longleaf pine, some scrub oak and sweet gum, and an undergrowth of gallberry, saw palmetto, and wire grass. Areas under cultivation give fair yields of cotton, corn, oats, and sugar cane. All crops are fertilized, and the yields secured depend largely upon the amount of manure or fertilizer used.

Leaf Series.

The surface soils of the Leaf series are light gray to gray. The subsoils characteristically consist of gray or mottled gray and yellow compact silty clay, which grades downward into mottled red and gray or red and yellow plastic clay through which water and air move slowly. Iron concretions are common on the surface. These soils are developed on stream terraces in the Coastal Plain region.

LEAF CLAY LOAM.

The soil of the Leaf clay loam, to a depth of 6 to 10 inches, is a clay loam. The color is dark gray in the surface few inches, grading into mottled gray and yellow below. The subsoil is a mottled yellow and gray plastic silty clay. The colors become more intense with depth, and the lower part of the 3-foot section also contains mottlings of bright red.

The Leaf clay loam is alluvial in origin. It occurs on the terraces adjoining the Ocmulgee and Altamaha Rivers, where it occupies depressions and flat, poorly drained areas of small extent. Owing to the flat or depressed topography and the dense impervious nature of the subsoil, the type is not used for agriculture. The soil remains wet for long periods after rains. The use of tile drains and lime is highly beneficial. It is a difficult soil to handle, but with proper management the type is capable of producing good yields of corn, oats, and heavy truck crops, such as cabbage and onions.

The type supports a fairly heavy growth of black gum and sweet gum, slash pine, and water oak. It has a low value.

Myatt Series.

The Myatt soils are gray. The subsoils range from gray to mottled gray and yellow, and are practically impervious. These soils occupy the poorest drained areas of the Coastal Plain stream terraces. They are mainly above overflow, but the surface is so flat that they remain inundated for long periods after heavy rains. They are closely associated with the Cahaba and Kalmia soils, and are composed of old alluvium, consisting of water-laid Coastal Plain material.

MYATT SAND.

The surface soil of the Myatt sand consists of a gray sand to coarse sand. In the poorly drained situations the material to a depth of 4 or 5 inches has a dark-gray to nearly black color, and is quite loamy. The subsoil, beginning at 6 to 8 inches, is a light-gray to nearly white sand, in some places containing considerable coarse sand.

This type is encountered on the terraces bordering the rivers and larger streams. The topography is flat and the drainage poor, the subsoil and even the surface soil at times being saturated a large part of the year. The soil is very similar to the Plummer sand, differing mainly in that it is of alluvial origin and occurs on terraces. It has a flatter topography than the typical Plummer sand.

Owing to its poor drainage and the danger from overflow, this soil is not cleared or cultivated. In order to effect its reclamation extensive ditching is required. It supports an open growth of longleaf and slash pine, with an undergrowth of gallberry, saw palmetto, and wire grass. It affords fairly good pasture, and has some value for lumbering.

BLACK SOILS.

SEDIMENTARY MATERIAL—SANDS AND CLAYS.

PORTSMOUTH SERIES.

The Portsmouth soils are dark gray, ranging to black. The surface soils are high in organic matter. The subsoils are light gray to mottled gray and yellow. The material of the heavier members is plastic, although carrying noticeable quantities of sand. These soils occupy flat to slightly depressed, poorly drained areas, and are most extensively developed in the low, seaward part of the Atlantic Coastal Plain and that part of the Gulf Coastal Plain east of the Mississippi River. The Portsmouth soils are sedimentary from Coastal Plain deposits.

PORTSMOUTH SANDY LOAM.

The Portsmouth sandy loam, to a depth of 10 to 15 inches, consists of a dark-gray to black medium sandy loam, so high in organic matter as to be mucky at the surface in places. Occasionally streaks or thin layers of light-gray sand occur.

The black surface soil is usually underlain by a very compact substratum of brown to light-gray sand, frequently mottled with ocherous yellow in the lower part. This compact sand grades at 12 to 24 inches into a mottled gray, drab, and yellow clay, which is very plastic and almost impervious to water. Pockets or thin streaks of sand or sandy loam sometimes occur, but they are of such slight extent that they have practically no influence on the dense clay.

This type is developed in sags and depressed areas, locally called cypress bays or ponds. It is not encountered in large areas, although this soil and the Portsmouth loam and Meadow are often connected in strips and narrow bodies along drainage ways forming large, poorly drained areas of the same general characteristics. The type occurs in the flatwoods section of the county. This soil is composed of marine sediments. Owing to the depressed topography, the material has been subjected to poor drainage, which has prevented oxidation and aeration, resulting in the mottled gray and yellow color of the subsoil.

The drainage of this soil is similar to that of the Portsmouth loam. Water stands on the type much of the time, being removed very gradually by lateral seepage and by evaporation, the dense structure of the subsoil practically preventing all downward movement.

The type supports an open growth of longleaf and shortleaf pine, with more or less cypress, and an undergrowth of gallberry, huckleberry, saw palmetto, and water-loving weeds and grasses. It affords some pasture during the summer. The longleaf pine is used for turpentine. When well drained the type should be adapted to corn and oats and to general truck crops.

PORTSMOUTH LOAM.

The soil of the Portsmouth loam consists of a black, mellow loam, varying in depth from 6 to 15 inches. This soil is very high in organic matter, the surface 3 or 4 inches sometimes being mucky. The black loam is typically underlain by a stratum of gray to nearly white, compact, fine to medium sandy loam. This stratum is quite variable in thickness. It is underlain by the subsoil, which begins usually at 15 to 20 inches, and consists of a mottled gray and yellow heavy clay, containing noticeable amounts of sand. The sand content decreases with depth, the clay becoming very plastic and more nearly impervious.

The Portsmouth loam occurs as comparatively small areas in the flatwoods southeast and south of Hazlehurst. It is developed in typical cypress bays and ponds, in depressed areas, and in sags. Owing to the topography and the impervious nature of the subsoil, drainage is very inadequate, and the type is inundated most of the time. It is composed of marine sediments, in which oxidation and aeration have been greatly retarded by lack of drainage, giving the mottled gray and yellow color to the subsoil. The black color and mucky nature of the surface soil are due to the accumulation of organic matter.

The type supports a characteristic growth of cypress and longleaf and shortleaf pine, the pine being thicker around the edges and the cypress occupying the interior of the areas. The undergrowth con-

sists of gallberry, huckleberry, saw palmetto, and water-loving grasses. At present the type is unused, except for open range, practically none of it being fenced. Drainage is essential to its agricultural utilization. This can be accomplished only by deepening and straightening the creeks and branches into which the surplus water drains, largely by lateral seepage. In addition, tiles and open drains are necessary. Where properly reclaimed, the Portsmouth loam should be well adapted to corn and grain. Its best use, however, would be for heavy truck crops, such as cabbage, onions, and beets, and celery on the more mucky portions. This land is valued only for its standing timber.

BROWN SOILS.

WATER-LAID MATERIAL (OLD ALLUVIUM)—MIXED DERIVATION.

Cahaba Series.

The surface soils of the Cahaba series are brown, ranging to reddish brown, and the subsoils are yellowish red to reddish brown. The Cahaba soils occupy old stream terraces. They are largely above overflow, and comprise the best drained land of these terraces. They are most extensively and typically developed in the Gulf Coastal Plain region of Alabama and Mississippi. The soil material consists of wash from the Coastal Plain soils, with some admixture along the larger streams from the Appalachian Mountains and Piedmont Plateau of material from the soils of those regions.

CAHABA SAND.

To a depth of 8 to 10 inches the Cahaba sand consists of a brown to reddish-brown sand. The surface few inches often have a dark grayish brown color and a loamy feel, due to the presence of organic matter. The subsoil to a depth of 36 inches is a reddish-brown sand, varying in texture to fine or coarse in small areas. The lower subsoil in places has a yellowish color.

This type is developed as a second-terrace soil along the Ocmulgee and Altamaha Rivers. The soil is alluvial in origin. It is limited to small bodies of very little agricultural importance under present conditions. The type is above normal overflow, but subject to inundation at times of unusually high water. The surface is flat to very gently undulating. Drainage is well established or even excessive, the soil drying in summer to a mass of loose, incoherent sand.

The type is forested with some longleaf and shortleaf pine, and various oaks which do not attain large size. A scanty growth of wire grass furnishes some pasture, which is practically the only use to which the type is put.

The Cahaba sand is a warm, early soil, and with the addition of organic matter and the liberal use of fertilizers it is capable of producing good yields of early truck crops, watermelons, and cantaloupes.

CAHABA SANDY LOAM.

The soil of the Cahaba sandy loam, to a depth of about 10 to 15 inches, is a brown to yellowish-brown slightly loamy sand. The subsoil to a depth of 36 inches or more is a dull-red to yellowish-red sandy clay which, although moderately friable under favorable moisture conditions, bakes hard on exposure. The subsoil is used to some extent for brickmaking.

The Cahaba sandy loam is alluvial in origin. It occurs as a second-terrace soil along the Ocmulgee and Altamaha Rivers. It is subject to occasional overflow, sometimes being deeply inundated but usually not for long periods. The topography is level to very gently undulating, the type occupying slight swells and well-drained situations bordering the river swamp or the river itself. The natural drainage is good. Most of the bluffs and points adjoining the river are occupied by this type.

Owing to the liability of overflow during the winter and spring months crops are uncertain on this type, and it is cleared and cultivated in only a few places. Most of the type is forested, the growth consisting of black and shortleaf pine, gums, various oaks, some of which attain a large size, and a few other trees, such as longleaf pine and cedar.

Where cultivated, good yields of the ordinary farm crops are obtained. Corn produces about 25 bushels, oats from 40 to 50 bushels, and cotton from one-half to three-fourths bale per acre. Sugar cane does well, but the sirup is rather dark. By straightening and deepening the rivers, which would largely prevent the rather frequent heavy overflows, a large total area of this type could be made available for cultivation.

At present cultivated areas of this type are valued at about $15 an acre. Uncleared land has a somewhat lower value.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Cahaba sandy loam:

Mechanical analyses of Cahaba sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
252608	Soil	2.0	9.9	16.9	40.4	10.4	12.7	7.6
252609	Subsoil	.1	.5	2.2	39.7	16.9	10.1	30.3

WATER-LAID MATERIAL (RECENT ALLUVIUM)—MIXED DERIVATION.

Congaree Series.

The Congaree soils are brown. They range in places to reddish brown, and there is comparatively little change in color, structure, and texture from the surface downward. Occasionally grayish and yellowish mottling is encountered in the subsoil of poorly drained areas. These soils are developed in the overflowed first bottoms of the streams of the Piedmont region and in similar positions in the Coastal Plain along streams issuing from the Piedmont. The material is derived from the soils of the Piedmont region, with some admixture of Appalachian material, and in the Coastal Plain a slight mingling of Coastal Plain material. The soils are usually poorly drained.

CONGAREE SILTY CLAY.

The surface soil of the Congaree silty clay to a depth of about 10 inches consists of a brown to light chocolate brown heavy silty clay loam to silty clay, sometimes faintly mottled with drab in the upper part. The subsoil is a light-brown to yellowish-brown silty clay or plastic clay, with occasional mottlings of red at lower depths. It is very dense and impervious. The type varies somewhat in texture. The surface soil sometimes contains noticeable quantities of sand of varying texture, and lenses and thin layers of sandy material are occasionally encountered in the subsoil.

The Congaree silty clay is an alluvial soil. It occupies first bottoms along the Ocmulgee and Altamaha Rivers. It borders the rivers in areas of varying width, seldom being over a mile wide, and usually lies from 8 to 15 feet lower than the second-bottom or terrace soils. Usually there is a slough or depression at the base of the escarpment made by the terrace, and the type is broken by numerous other sloughs and troughlike depressions. The topography is flat, except where broken by these sloughs. The type has poor natural drainage, due to its flat topography and heavy texture, and is subject to frequent and prolonged overflow, often being inundated during the winter and spring months to a depth of many feet. It has the local name of "river swamp," and occurs under true swamp conditions. The soil dries out thoroughly in protracted dry periods, except in the deeper sloughs, but is so frequently overflowed that its use for agriculture is impossible. The expense involved in its reclamation is prohibitive, the construction of high, substantial dikes, as well as deepening and straightening the rivers, being necessary. Where reclamation is feasible the soil should be very productive.

The chief value of this type lies in its excellent forest growth, consisting of black and slash pine, various gums, oaks, and other hard-

woods, such as magnolia, hickory and some sycamore. The river swamp furnishes pasturage for hogs, and to some extent for cattle. Aside from this the type is unused.

MISCELLANEOUS MATERIAL.

MEADOW.

Meadow comprises the swamplike strips along the drainage ways, branches, and creeks of the county. The material is variable in composition. It usually consists of black, mucky sand or sandy loam underlain at various depths within the 3-foot section by gray to nearly white sand. In places there is a surface layer of muck a few inches in thickness. As a rule the surface material is high in organic matter.

The strips of Meadow are typically bordered on each side by areas of the Plummer soils, the boundary often being difficult to determine because of the gradation. This type is saturated during a greater part of the year, and is usually inundated during the winter and spring months. All of the material, however, dries out during certain periods in summer, even that along the larger creeks, and it is thus differentiated from true swamp.

Meadow does not spread out in wide areas along the creeks, as does the typical swamp. The type is partly alluvial in origin, and in some cases slightly colluvial.

This type is not used for agricultural purposes. It supports a growth of bay, gum, swamp maple, and longleaf and slash pine, with a thick undergrowth of gallberry, ferns, and various bushes and shrubs. But little cypress occurs on this type.

SUMMARY.

Jeff Davis County is situated in the southeastern part of Georgia. It comprises an area of 325 square miles, or 208,000 acres. It lies within the Coastal Plain. The topography is flat to rolling. The county is drained by the Ocmulgee and Altamaha Rivers, which form the western and northern boundaries, and by numerous creeks which eventually flow into the Satilla River.

The county is a comparatively new one, having been formed from parts of Coffee and Appling Counties in 1905. There are no large towns in the county. Settlement has been slow, a population of only 6,050 being reported in the 1910 census. The transportation facilities are good. Two railroads traverse the county, and cheap transportation is furnished by river boats.

All parts of the county are reached by rural free delivery and telephones are in common use.

The climate is typical of south Georgia. The winters are mild, and the summers long and hot. The rainfall averages about 47 inches annually, and is well distributed through the year.

Agricultural development has been slow. Until recently lumbering and turpentining were the most important industries. Now that most of the merchantable timber has been removed agriculture is attaining greater importance.

Cotton is the money crop, and is commonly grown continuously. Corn ranks next to cotton in importance. Of the small grains oats, usually cut green for hay, are the most important. Cowpeas, velvet beans, and peanuts, vetch, and lespedeza are important minor crops. The soils and climate are well adapted to the production of sugar cane and sweet potatoes.

The growing of truck crops, mainly melons, cantaloupes, and cucumbers, on a commercial scale has recently been introduced and gives promise of developing into an important industry.

Twenty-two soil types are mapped in Jeff Davis County. These are grouped in 12 series and one miscellaneous type.

The Norfolk and Tifton are by far the most important soils in the county, both in areal extent and in agricultural value.

The Tifton sandy loam, locally called "pimply" or "pebbly" land, is considered the best soil in the county. It is used to some extent for the production of sea-island cotton, and is an excellent soil for general farming.

The Norfolk sandy loam ranks next to the Tifton sandy loam as a desirable general-purpose soil.

The Portsmouth and Leon soils and to some extent the Norfolk sand occur in the flatwoods section. These soils are generally in need of drainage. Where properly drained the Portsmouth soils are well adapted to corn and to the production of heavy truck crops.

The other soils of the county are of small extent and little importance. Some of the terrace soils are valuable for farming where protected from overflow. The Congaree silty clay, a first-bottom type, is frequently and deeply overflowed. At present it is valued only for the forest it supports and for pasture.

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[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]

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U S DEPT OF AGRICULTURE
BUREAU OF SOILS
MILTON WHITNEY, CHIEF
CURTIS F MARBUT, IN CHARGE SOIL SURVEY

SOIL MAP
GEORGIA
JEFF DAVIS COUNTY SHEET

GEORGIA STATE COLLEGE OF AGRICULTURE
ANDREW M SOULE, PRESIDENT.
DAVID D LONG IN CHARGE SOIL SURVEY.

SOIL PROFILE
(3 feet deep)

Sedimentary material — Sands and clays — GRAY SOILS

- Norfolk coarse sand — Cs / Cs
- Tifton sandy loam — Ls / Sc
- Norfolk sand — S / S
- Ruston sandy loam — Ls / Sc
- Norfolk loamy sand — Ls / Ls / Sl
- Susquehanna sandy loam — Sl / Hc
- Norfolk coarse sandy loam — Csl / Csc
- Leon sand — S / S / S
- Norfolk sandy loam — Ls / Sc — Flat phase
- Plummer sand — S / S
- Plummer sandy loam — Ls / Sc

Water-laid material (old alluvium) — Mixed derivation — GRAY SOILS

- Kalmia coarse sand — Cs / Cs
- Leaf clay loam — Cl / Sic
- Kalmia sand — S / S
- Myatt sand — S / S
- Kalmia sandy loam — Ls / Sc

Sedimentary material — Sands and clays — BLACK SOILS

- Portsmouth sandy loam — Sl / S / C
- Portsmouth loam — L / C

Water-laid material (old alluvium) — Mixed derivation — BROWN SOILS

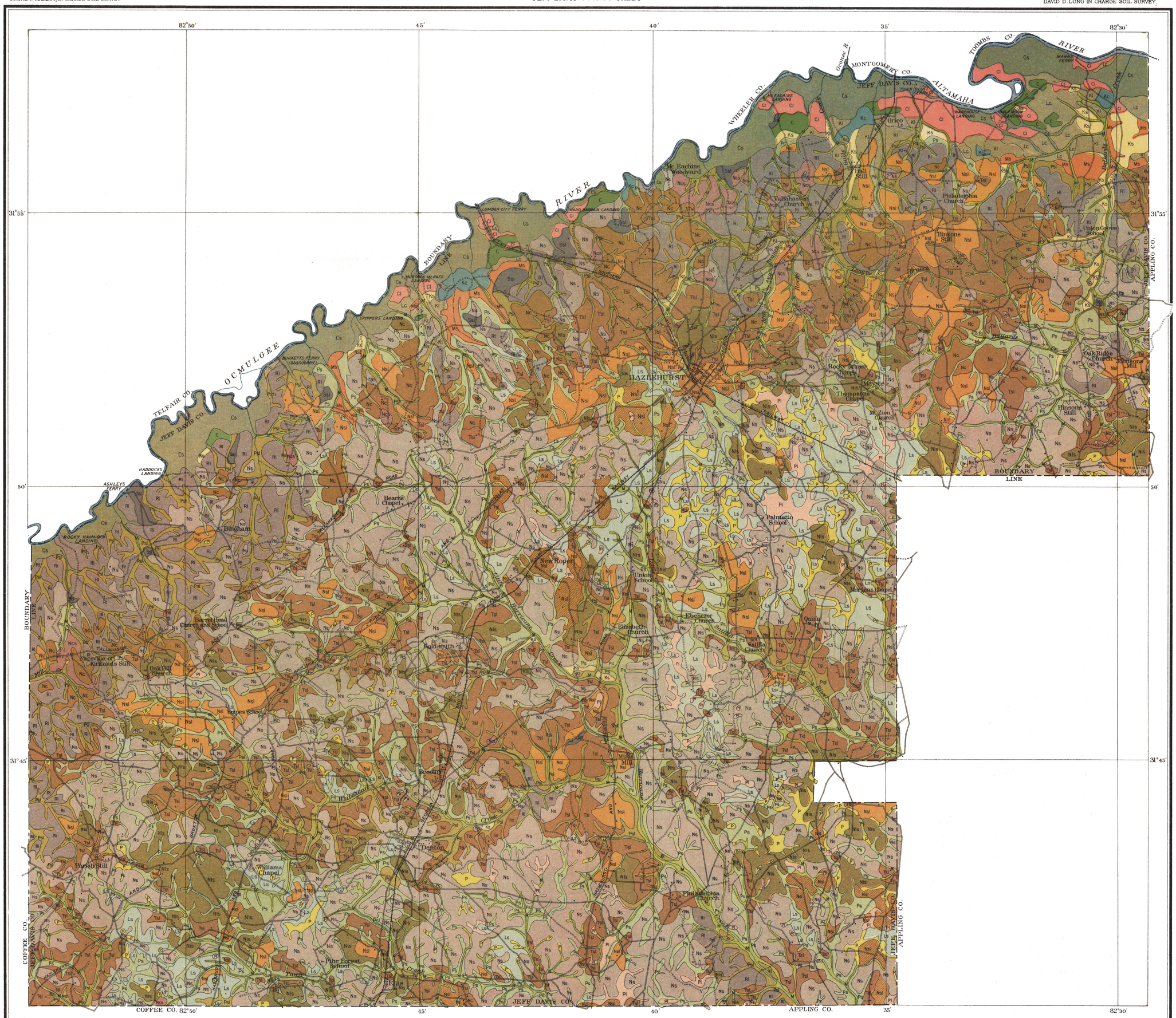
- Cahaba sand — S / S
- Cahaba sandy loam — Ls / Sc

Water-laid material (Recent alluvium) — Mixed derivation — BROWN SOILS

- Congaree silty clay — Sic / Sic

LEGEND

Cs	Coarse sand
S	Sand
Ls	Loamy sand
Sl	Sandy loam
Csl	Coarse sandy loam
Csc	Coarse sandy clay
Sc	Sandy clay
Hc	Heavy clay
L	Loam
C	Clay
Cl	Clay loam
Sic	Silty clay
Sicl	Silty clay loam



LEGEND

Sedimentary material — Sands and clays — GRAY SOILS

- Norfolk coarse sand — Nc
- Tifton sandy loam — Tsl
- Norfolk sand — Ns
- Ruston sandy loam — Rl
- Norfolk loamy sand — Nls
- Susquehanna sandy loam — Ssl
- Norfolk coarse sandy loam — Ncs
- Leon sand — Ls
- Norfolk sandy loam — Nsl — Flat phase
- Plummer sand — Ps
- Plummer sandy loam — Psl

Water-laid material (old alluvium) — Mixed derivation — GRAY SOILS

- Kalmia coarse sand — Kc
- Leaf clay loam — Lc
- Kalmia sand — Ks
- Myatt sand — Ms
- Kalmia sandy loam — Kl

Sedimentary material — Sands and clays — BLACK SOILS

- Portsmouth sandy loam — P
- Portsmouth loam — Pl

Water-laid material (old alluvium) — Mixed derivation — BROWN SOILS

- Cahaba sand — C
- Cahaba sandy loam — Cl

Water-laid material (Recent alluvium) — Mixed derivation — BROWN SOILS

- Congaree silty clay — Cs

Miscellaneous material — Mixed derivation

- Meadow — M

W Edward Hearn, Inspector Southern Division
Soils surveyed by Percy O.Wood, W.J.Latimer, H.C.Goodrich, and E.C.Hall

SNYDER & BLACK, N.Y.

Field Operations
Bureau of Soils
1913